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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WANG, QUAN ZHEN

ART UNIT PAPER NUMBER

2633

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/089,156	MUNEHIRA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Quan-Zhen Wang	2633	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 March 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/27/02</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "optical amplifying means comprises ... optical amplifier which has a signal input terminal terminated at no reflection" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Kagawa et al. (JP 2000-286492), or Boot (U.S. Patent US 6,097,523), or Ryu et al. (U.S. Patent US 6,330,384B1).

Regarding claim 1, the prior art fig. 1 of the instant application teaches a wavelength division multiplexing and optical transmission apparatus comprising a plurality of optical transmitting units (fig. 1, optical transmitting unit 1-m to 1+m) for modulating a plurality of laser signals having inherent wavelengths with a plurality of

data signals and outputting a plurality of modulated optical signals (fig. 1,  $\lambda-m$  to  $\lambda+m$ ); optical multiplexing means for multiplexing the non-modulated dummy optical signals (fig. 1,  $\lambda_2$  and  $\lambda_3$ ) with the modulated optical signals output by the optical transmitting units and transmitting a multiplexed optical signal. The prior art fig. 1 differs from the claimed invention in that the prior art of the instant application does not specifically teach optical amplifying means for outputting an amplified spontaneous emission light signal; band pass filtering means for filtering the amplified spontaneous emission light signal output by the optical amplifying means and outputting a non-modulated spectrum slice optical signal. However, Kagawa teaches optical amplifying means (fig. 3, ASE 1) for outputting an amplified spontaneous emission light signal; band pass filtering means (fig. 3, bandpass filter 5) for filtering the amplified spontaneous emission light signal output by the optical amplifying means and outputting a non-modulated spectrum slice optical signal (fig. 3,  $\lambda_1$  to  $\lambda_n$ ). Likewise, Boot teaches optical amplifying means (fig. 1, amplifier 6) for outputting an amplified spontaneous emission light signal (fig. 1, the arrow between 6 and 7); band pass filtering means (fig. 1, bandpass filter 7) for filtering the amplified spontaneous emission light signal output by the optical amplifying means and outputting a non-modulated spectrum slice optical signal (fig. 1, the output from device 3). Likewise, Ryu teaches optical amplifying means (fig. 3) for outputting an amplified spontaneous emission light signal (fig. 3, 20'); Ryu further teaches that the ASE light source can be used as light sources sliced spectrum (column 1, lines 20-24) inherently having bandpass filters. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate optical

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amplifying means for outputting an amplified spontaneous emission light signal; band pass filtering means for filtering the amplified spontaneous emission light signal output by the optical amplifying means and outputting a non-modulated spectrum slice optical signal, as it is taught by Kagawa, or Boot, or Ryu, to replace the dummy optical signal sources in the system of the prior art fig. 1 of the instant application in order to provide stable dummy signals and inexpensive networks.

2. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Kagawa et al. (JP 2000-286492) and further in view of Wagener et al (U.S. Patent US 5,875,203).

Regarding claim 2, the prior art fig. 1 of the instant application and Kagawa have been discussed above in regard with the rejection for claim 1. The modified system of the prior art fig. 1 of the instant application and Kagawa differs from the claimed invention in that the prior art fig. 1 of the instant application and Kagawa do not specifically teach that the optical amplifier means comprises optical amplifier having a signal input terminal terminated at no reflection. However, Wagener teaches optical amplifier means comprises optical amplifier having a signal input terminal terminated at no reflection (figs. 7A, 7C and 7D). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate the optical amplifier means taught by Wagener in the modified system of the prior art fig. 1 of the instant application and Kagawa for the ASE source in order to provide stable ASE sources for the dummy optical signals.

The modified system of the prior art fig. 1 of the instant application, Kagawa and Wagener further differs from the claimed invention in that the prior art fig. 1 of the instant application, Kagawa and Wagener do not specifically teach that the optical amplifier means comprises a pair of optical amplifiers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ more than one optical amplifiers for the optical amplification means since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 3, the prior art fig. 1 of the instant application, Kagawa and Wagener have been discussed above in regard with the rejection for claims 1 and 2. The modified system of the prior art fig. 1 of the instant application, Kagawa and Wagener teaches the optical amplifying means comprises an optical amplifier which has a signal input terminal terminated at no reflection. The modified system of the prior art fig. 1 of the instant application, Kagawa and Wagener differs from the claimed invention in that the prior art fig. 1 of the instant application, Kagawa and Wagener do not specifically teach that the bandpass filter means comprises a light dividing element for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals and a plurality of optical band pass filters, connected to a plurality of divided output terminals of the light element respectively, for outputting the non-modulated spectrum slice optical signal. However, Kagawa further teaches that the bandpass filter means comprises a light dividing element (fig. 3, CPL 4) for dividing the amplified spontaneous emission light signal

output by the optical amplifier into a plurality of amplified spontaneous emission light signals (fig. 3,  $\lambda_1$ - $\lambda_n$ ) and a plurality of optical band pass filters (fig. 3, filters 5), connected to a plurality of divided output terminals of the light element respectively, for outputting the non-modulated spectrum slice optical signal (fig. 3,  $\lambda_1$ - $\lambda_n$ ). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a light dividing element for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals and a plurality of optical band pass filters, connected to a plurality of divided output terminals of the light element respectively, for outputting the non-modulated spectrum slice optical signal, as it is taught by Kagawa, to replace the dummy optical signal sources in the system of the prior art fig. 1 of the instant application, Kagawa and Wagener in order to provide multi-wavelength dummy signals using a single ASE source to reduce the cost of the system.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Kagawa et al. (JP 2000-286492) and further in view of Wagener et al (U.S. Patent US 5,875,203) and further in view of Fukushima et al. (U.S. Patent US 6,198,570 B1).

Regarding claim 4, the prior art fig. 1 of the instant application, Kagawa and Wagener have been discussed above in regard with the rejection for claims 1-3. The modified system of the prior art fig. 1 of the instant application, Kagawa and Wagener teaches the optical amplifying means comprises an optical amplifier which has a signal

input terminal terminated at no reflection. The modified system of the prior art fig. 1 of the instant application, Kagawa and Wagener differs from the claimed invention in that the prior art fig. 1 of the instant application, Kagawa and Wagener do not specifically teach that the system further comprises an optical multiplexer for multiplexing two or more outputs of the optical band pass filters with each other and outputting the non-modulated spectrum slice optical signal, and an optical amplifier for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value. However, it is well known in the art to use optical multiplexer for multiplexing two or more outputs of the optical signals, including non-modulated spectrum slice optical signal, and an optical amplifier for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value. For example, Fukushima teaches to use an optical multiplexer (fig. 1, multiplexer 3) for multiplexing two or more outputs of the optical signals (fig. 1,  $\lambda_1$ - $\lambda_n$ ), and an optical amplifier (fig. 1, optical amplifier 4) for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value (column 7, lines 6-10). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an optical multiplexer for multiplexing two or more outputs of the optical signals, and an optical amplifier for amplifying an output of the optical multiplexer while controlling a power of the output to a constant value, as it is taught by Fukushima, in the modified system of the prior art fig. 1 of the instant application, Kagawa and Wagener in order to boost the power strength of the ASE source used for dummy optical signals.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Kagawa et al. (JP 2000-286492) and further in view of Wagener et al (U.S. Patent US 5,875,203) and further in view of Alphonus et al. (U.S. Patent US 5,764,405).

Regarding claim 5, the prior art fig. 1 of the instant application, Kagawa and Wagener have been discussed above in regard with the rejection for claims 1 and 2. The modified system differs from the claimed invention in that the prior art fig. 1 of the instant application, Kagawa and Wagener do not specifically teach that the optical amplifying means comprises a plurality of pumping laser signal sources connected to the optical amplifier redundantly. However, it is well known in the art that redundant pumping lasers are used to provide for a virtually non-failing optical amplifier. For example, Alphonus teaches to use redundant pump lasers (fig. 2, Pumps 50) to provide for a virtually non-failing optical amplifier (column 4, lines 21-32). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an amplifier with redundant pump sources, at it is taught by Alphonus, along the transmission line, in the modified system of prior art fig. 1 of the instant application, Kagawa and Wagener in order to boost the ASE power strength for dummy optical signals and provide reliable transmission system.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art fig. 1 of the instant application in view of Kagawa et al. (JP 2000-286492) and further in view of Mathis (U.S. Patent US 4,726,644).

Regarding claim 6, the prior art fig. 1 of the instant application and Kagawa have been discussed above in regard with the rejection for claim 1. The modified system of the prior art fig. 1 of the instant application and Kagawa differs from the claimed invention in that the prior art fig. 1 of the instant application and Kagawa do not specifically teach that the band pass filtering means comprises a plurality of optical band pass filters connected in cascade. However, it is well known in the art to cascade two or more band pass filters. For example, Mathis teaches to connect two filters in cascade (column 9, lines 44-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use a plurality of optical band pass filters connected in cascade, as it is taught by Mathis, in the modified system of the prior art fig. 1 of the instant application and Kagawa in order to provide multiple stage of bandpass filtering with a narrower pass band.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Falquier et al. (U.S. Patent US 6,429,965 A1 B1) is cited to show a wavelength stable ASE source.

DeMarco et al. (U.S. Patent US 6,195,200 B1) is cited to show a high power ASE source.

Dugan et al. (U.S. Patent US 6,157,475) is cited to show a system to amplify wavelength multiplexed optical signals.

Badr et al (U.S. Patent US 6,567,207 B1) is cited to shown optical amplifiers with redundant pumps to increase the reliability.

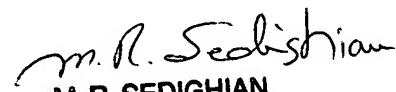
Toshiharu (JP 11-088263) is cited to shown the application of cascaded band pass filters.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw

  
M. R. SEDIGHIAN  
PRIMARY EXAMINER